

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GUENTHER MUELLER and JOSEF STEIGENBERGER

Appeal 2007-1532
Application 10/089,735
Technology Center 2800

Decided: June 19, 2007

Before JOHN C. MARTIN, JEAN R. HOMERE, and JOHN A. JEFFERY,
Administrative Patent Judges.

HOMERE, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's Final Rejection of claims 1 through 5. We have jurisdiction under 35 U.S.C. § 6(b) to decide this appeal.

Appellants invented an acoustic pressure calibrator and a method for calibrating the sound pressure level of a sensor. Particularly, the invention

uses a high pressure adapter (2) to acoustically amplify the sound pressure emitted by a pistonphone (1) and to subsequently calibrate the sound pressure level sensor. (Specification 1 and 2.)

Claim 1 is illustrative and representative of the claimed invention. It reads as follows:

1. A sound pressure level calibrating a sound pressure level sensor comprising:

a pistonphone having a piston and an adjustable pistonphone volume for producing a sound pressure with a selected excitation frequency;

and a high-pressure adapter, which is connected to an output of the pistonphone volume; wherein

the high-pressure adapter includes a tube formed as a $\lambda/4$ resonator having a length which is adapted to the excitation frequency of the pistonphone to amplify the sound pressure produced in the pistonphone volume and an expanded adapter opening with a sealing ring for a soundproof connection to said sound pressure level sensor to be calibrated.

In rejecting the claims on appeal, the Examiner relied upon the following prior art:

Takashi JP 405049097 (English Abstract) Feb. 26, 1993
Complete Translation Dec. 2004

Barham, R. G., *The NPL Laser Pistonphone*, Journal of Low Frequency Noise and Vibration, Vol. 12, No. 2, 36-38 (1993).

The Examiner rejected the claims on appeal as follows:

Claims 1 through 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Takashi and Barham.

First, Appellants contend¹ that the combination of Takashi and Barham does not render claims 1 through 5 unpatentable. Particularly, Appellants contend that the Takashi-Barham combination does not teach a high pressure adapter connected to the output of the pistonphone volume to include (1) a tube formed as a quarter wave resonator having a length adapted to the excitation frequency of the pistonphone to amplify the sound pressure produced in the pistonphone volume and (2) an expander adapter opening with a sealing ring for a soundproof connection to the sound pressure level sensor to be calibrated, as recited in representative claim 1. (Br. 5; Reply Br. 2.)

The Examiner, in contrast, contends that Takashi substantially teaches the limitations of representative claim 1. (Answer 3.) The Examiner further submits that Barham's teachings complement Takashi's system. (Final Office Action 4.) The Examiner therefore concludes that it would have been obvious to one of ordinary skill to combine teachings of the cited references to arrive to the claimed invention, as recited in representative claim 1. (*Id.*) Similarly, the Examiner concludes that the combination of Takashi and Barham renders claims 2 through 5 unpatentable. (*Id.*)

We reverse.

ISSUES

The *pivotal* issue in the appeal before us is as follows:

Have Appellants shown that the Examiner has failed to establish that

¹ This decision considers only those arguments that Appellants submitted in the Appeal and Reply Briefs. Arguments that Appellants could have made but chose not to make in the Briefs are deemed to have been waived. See 37 C.F.R. § 41.37(c)(1) (vii)(eff. Sept. 13, 2004). See also *In re Watts*, 354 F.3d 1362, 1368, 69 USPQ2d 1453, 1458 (Fed. Cir. 2004).

one of ordinary skill in the art, at the time of the present invention, would have found that the combination of Takashi and Barham renders the claimed invention unpatentable under 35 U.S.C. § 103(a)?

FINDINGS OF FACT

The following findings of fact are supported by a preponderance of the evidence.

The Invention

1. Appellants invented a method and system using a high pressure adapter (2) to acoustically amplify the sound pressure emitted by a pistonphone (1) and to subsequently calibrate the sound pressure level sensor (3). (Specification 1 and 2.)
2. As depicted in Figure 1, the pistonphone (1) includes a piston (4) and an adjustable pistonphone volume (5) that produces a sound pressure with a selected excitation frequency. (*Id.* 3.)
3. The output of the adjustable pistonphone volume (5) is then connected to the high pressure adapter (2) that uses a quarter wave resonator to amplify the emitted sound pressure. (*Id.*)
4. The high pressure adapter subsequently uses an expanded adapter opening (7) with a sealing ring (8) to apply the amplified sound pressure to the sensor (3) in a soundproof manner. (*Id.*)

The Prior Art Relied Upon

5. Takashi teaches a system that uses the sound pressure of a piston (11) in a pressure chamber (3) to calibrate a microphone (M). (Title, abstract.)
6. As depicted in Figure 1, Takashi teaches that the piston (11) produces a simple harmonic motion of a stroke (S) at a fixed frequency by periodic

operation of a cam (7) to induce sound pressure in the pressure chamber (3).
(Translation 4, 6, and 7.)

7. The pressure chamber (3) is formed of an outside cup-like body (1) and an inside cup-like body (2) positioned in a nest-like configuration. The volume of the pressure chamber (3) is adjusted by providing relative rotations to the cup-like bodies, mutually moving forward and backward.
(*Id.* 4 and 5.)

8. The adjusted sound pressure exiting the pressure chamber (3) is fed to an inner connection hole (13) attached to a microphone mount hole (12), which applies the adjusted sound pressure to the microphone (M) air tightly mounted thereon by a sealing ring (15). (*Id.* 6 and 7.)

PRINCIPLES OF LAW

OBVIOUSNESS (Prima Facie)

The Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), stated that three factual inquiries underpin any determination of obviousness:

Under § 103, [1] the scope and content of the prior art are to be determined; [2] differences between the prior art and the claims at issue are to be ascertained; and [3] the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a prima facie case of obviousness. *In re*

Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). Where the claimed subject matter involves more than the simple substitution one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness must be based on “an apparent reason to combine the known elements in the fashion claimed.” *KSR Int’l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007). That is, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.*, 127 S. Ct. at 1741, 82 USPQ2d at 1396 (quoting *In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)). Such reasoning can be based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. *KSR*, 127 S. Ct. at 1740-41, 82 USPQ2d at 1396.

Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellant. *Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444. *See also Piasecki*, 745 F.2d at 1472, 223 USPQ at 788. Thus, the Examiner must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the Examiner’s conclusion.

ANALYSIS

35 U.S.C. § 103(a) REJECTION

As set forth above, representative claim 1 recites, *inter alia*, a high-pressure adapter, connected to the output of the pistonphone having a quarter

wave resonator with a length adapted to² the excitation frequency of the pistonphone to amplify the sound pressure produced by the pistonphone. As detailed in the findings of fact section above, we have found that Takashi teaches a piston that generates a sound pressure at a fixed frequency in a pressure chamber having an adjustable volume. (Findings of Fact 6 and 7.) We have also found that Takashi discloses a connection hole inside the pressure chamber that conveys the generated sound pressure to the microphone resting on a microphone mount. (Finding of Fact 8.) We have found, however, that Takashi does not teach or suggest the quarter wave resonator. One of ordinary skill in the art would find that Takashi's teachings, at best, amount to a tube that conveys the sound pressure generated in the pressure chamber. Without any further evidence on the record, however, the ordinarily skilled artisan would not be able to conclude that the tube suggested by Takashi is a quarter wave resonator having a length that can be tuned to the frequency of the pistonphone to amplify the sound pressure produced in the pistonphone. Further, we find that Barham fails to cure the deficiencies of Takashi. In light of these findings, it is our view that the combined teachings of Takashi and Barham do not result in a high-pressure adapter, connected to the output of the pistonphone, having a quarter wave resonator with a length adapted to the excitation frequency of

² We note that the statement "*adapted to* the excitation frequency of the pistonphone to amplify the sound pressure produced in the pistonphone volume" appears to be a structural limitation. Here, "adapted to" appears to imply that the resonator length is tuned to the excitation frequency of the pistonphone to amplify the sound pressure produced by the pistonphone volume. This language therefore does appear to limit the resonator length to a particular structure. See MPEP § 2111.04 (8th ed., rev. 5, Aug. 2006).

the pistonphone to amplify the sound pressure produced by the pistonphone, as recited in representative claim 1. It follows that the Examiner erred in rejecting claims 1 through 5 as being unpatentable over Takashi and Barham.

OTHER MATTERS

During the oral argument, Appellants' counsel provided the panel members with copies of the following prior art reference, which is being made of record:

Van Ligten US 6,167,985 B1 Jan. 2, 2001

CONCLUSION OF LAW

On the record before us, Appellants have shown that the Examiner failed to establish that one of ordinary skill in the art, at the time of the present invention, would have concluded that Takashi in combination with Barham renders claims 1 through 5 unpatentable under 35 U.S.C. § 103(a).

DECISION

We reverse the Examiner's decision to reject claims 1 through 5 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Takashi and Barham.

REVERSED

tdl/ce

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